

## DEVELOPMENT OF BAMBOO/SILK AND BAMBOO/COTTON

### BLEND SAREE WITH KALAMKARI PATCH WORK

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#### ABSTRACT

The main aim of this research is to know about the resemblances and differences between natural, regenerated fabrics. This research is done by blending the two selected yarns, cotton and silk with the regenerated fiber bamboo, then the blended yarn are weaved, and finished with Kalamkari patchwork. Testing is done and tabulated it includes Pilling resistance, Air permeability, Drapability, Crease recovery and abrasion resistance and the results of testing is tabulated. Therefore the sarees are successfully developed and comparison is made by evaluating its properties, characteristics and testing the physical and chemical properties. A bar chart is been shown to make an effective comparison of both sarees. The value from testing reveals that Air permeability and Drapability is higher for bamboo/cotton blend. Pilling resistance and abrasion resistance is higher comparatively for bamboo/silk, Crease recovery is an equivalent factor. Bamboo fabrics are now a day's filling the vacancy in the textile material development in our textile production nation and these will inevitably stimulate the new fabric development through blending and finishing, among the cotton and silk and bring the textile corporations a new opportunity.

#### Objectives

- To implement the study of bamboo by developing a product
- To develop a saree of cotton and bamboo of plain weave structure using power loom
- To embellish the saree with kalamkari patch work
- To develop another saree with bamboo and silk of plain weave structure using hand loom
- To test the sarees for drapability, air permeability, pilling resistance, crease recovery and abrasion resistance
- To evaluate the results and compare the values
- To develop a bar chart with the obtained test result.

**KEYWORDS:** Between Natural, Regenerated Fabrics, Physical and Chemical Properties & Bamboo/Cotton Blend

#### INTRODUCTION

Organic textiles are grown in controlled settings with no pesticides, herbicides, or other chemicals. Only natural fertilizers are used and the soil and water are monitored. If a fiber is "certified organic" its growing conditions have been monitored and certified by an agency from one of the several organic trade associations worldwide. A fabric can be called

organic as long as 95% of the fabric contains the organic fabric

Bamboo textiles are cloth, yarn, and clothing made out of bamboo fibres. While historically used only for structural elements, such as bustles and the ribs of corsets, in recent years a range of technologies have been developed allowing bamboo fibre to be used in a wide range of textile and fashion applications. Modern bamboo clothing is clothing made from either 100% bamboo yarn or a blend of bamboo and cotton yarn. The bamboo yarn can also be blended with other textile fibres such as hemp or even spandex.

Cotton is a soft, fluffy staple fiber that grows in a boll, or protective capsule, around the seeds of cotton plants of the genus *Gossypium*. The fiber is almost pure cellulose. Under natural condition, the cotton balls will tend to increase the dispersion of the seeds. The plant is a shrub native to tropical and subtropical regions around the world, including the Americas, Africa, and India. The greatest diversity of wild cotton species is found in Mexico, followed by Australia and Africa. Cotton was independently domesticated in the Old and New Worlds. The English name derives from the Arabic (al) qutn which began to be used circa 1400 CE. The Spanish word, "algodón", is likewise derived from the Arabic

The most abundant form of silk, a natural protein fiber, is cultivated from the cocoon of mulberry silkworm larvae. The process of is time-consuming and delicate, which explains the high cost of silk. The fiber gets its brilliant shimmer from its structure, a triangular prism that reflects light at varying angles. Silk fabric is widely regarded as the most luxurious textile on the planet. Its tumultuous history, rife with wars, secrecy, and centuries of trade, bears little resemblance to the fabric's current reputation for being the epitome of high fashion.

## **MATERIALS & METHODS**

For the purpose of this study bamboo hosiery yarn, cotton and silk yarn are selected to weave two sarees of Bamboo/Cotton and Bamboo/Silk blend. For Bamboo/Cotton saree Warp - 100 % cotton, Yarn is 64's, yarn type is kora, undyed. Then for Weft - 100% Bamboo, Yarn is 2/60's, and Yarn type is Kora, undyed, knitted. Next for Bamboo/Silk saree warp - 100% Silk, Yarn is 120's, and Yarn type – is dyed, and for weft 100% Bamboo, Yarn is 2/60's, Yarn type – kora, undyed, knitted. Then the yarn's is weaved for both the sarees, the weaving structure is plain weave. Finally Bamboo/Cotton saree is finished with Kalamkari patchwork, For Bamboo/Silk the saree itself contains an traditional motif of leaf

## **EXPERIMENTAL PROCEDURE**

The process sequence followed for this project is Purchase of yarn, next weaving process for both Bamboo/Cotton and Bamboo/silk the process is done separately, for Bamboo/Cotton- (50% bamboo and 50% cotton) is blended and weaved into a saree of five and half metres. Weaved in power loom. Then for embellishment Kalamkari patch work is done. For Bamboo/Silk (50% bamboo and 50% silk) is blended and weaved into a saree of five and half metres Weaved in hand loom. For embellishment the saree itself contains an traditional motif of leaf

## **RESULTS & DISCUSSIONS**

### **Evaluation of Result**

Samples tested at: R.H. 65% +/-2% and Temp. 21Degree C +/-1 Degree C

Table 1

S. No	Type of Tests	Bamboo/Silk Blend Saree	Bamboo/Cotton Blend Saree
1.	<b>FABRIC – AIR PERMEABILITY</b> (as per ASTM D 737-2004) Air permeability in c.c/cm. sq./sec.	486	222
2.	<b>FABRIC PILLING TEST</b> (as per IS:10971-84)(Reaffirmed 1999) <b>Pilling Rating :</b> <b>Rating Degree of Pilling</b> <ul style="list-style-type: none"> <li>• Very severe pilling</li> <li>• Severe pilling</li> <li>• Moderate pilling</li> <li>• Slight pilling</li> <li>• No pilling</li> </ul>	5H	1H
3.	<b>FABRIC – DRAPE MEASUREMENT</b> (as per BS 5058-1973) Mean Drape Co-efficient(%)	86.08	74..22
4.	<b>FABRIC – CREASE RECOVERY</b> Crease Recovery Angle Warp:Crease Recovery Angle Weft:Crease recovery Angle	105 degree 105 degree	107 degree 99 degree
5.	<b>FABRIC – ABRASION RESISTANCE</b> No of strokes to abrade the fabric Warp Weft	33 13	46 28

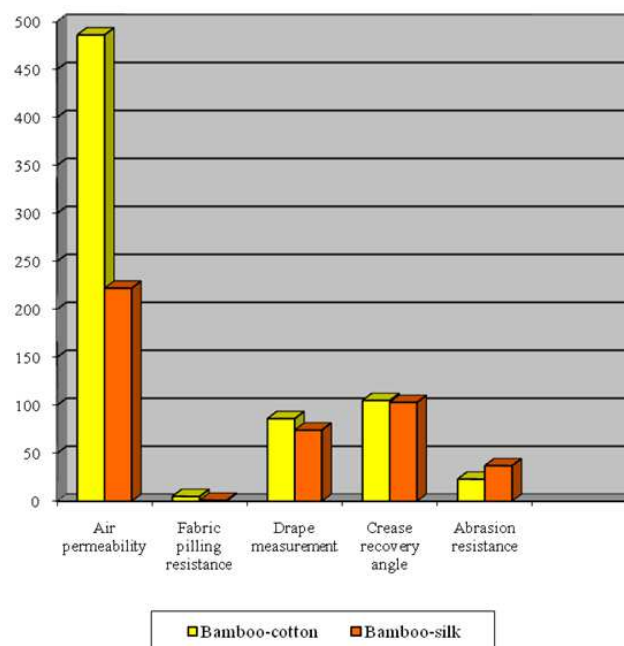


Figure 1: Comparison of Bamboo/Cotton and Bamboo/Silk

- A bar chart is been shown to make an effective comparison of both sarees.
- The value from testing reveals that air permeability and drapability is higher for bamboo-cotton blend.
- Pilling resistance and abrasion resistance is higher comparatively for silk, crease recovery is an equivalent factor.

## SUMMARY AND CONCLUSIONS

Thus the first saree is weaved by blending the cotton and bamboo yarn. The structure of the saree is plain weave and done using power loom. The saree is then embellished with 'kalamkari' patchwork.

The second one is done by weaving silk kora yarn and bamboo yarn in equal proportions. The structure of the saree is plain weave and it is handloomed. The saree itself contains an embellished traditional motif of leaf.

Thus both sarees are constructed and compared. Testing is done for both the sarees and results are tabulated. Testing includes pilling resistance, air permeability, drapability, crease recovery and abrasion resistance and the results of testing is tabulated.

Therefore the sarees are successfully developed and comparison is made by evaluating its properties, characteristics and testing the physical and chemical properties. A bar chart is been shown to make an effective comparison of both sarees.

The value from testing reveals that air permeability and drapability is higher for bamboo/cotton blend. Pilling resistance and abrasion resistance is higher comparatively for bamboo/silk, crease recovery is an equivalent factor.

## REFERENCES

1. Subrata Das, "Properties of Bamboo Fibers" Trade Literature, Switzerland.
2. Susheela Dantyagi, (2000), Fundamentals of Textiles and their Care, Orient Longman Ltd, New Delhi, 5th edition
- Booth, J.E., (1996), "Principles of Textile Testing", C.B.S. Publishers, Delhi.
3. Booth, J.E., (1996), "Principles of Textile Testing", C.B.S. Publishers, Delhi.
4. Alat, D.V., and Saraf.N.M, (2005), "Processing of Cotton-Solution Providers-Sarex", Colourage, Vol.LII, November, P.73.
5. Benoit Henault and Russ Elms (2001), "New Technologies for fabric care", 9e Giornate CID in Venezia
6. Sara. J. Kadolph (2009) Textiles, Published by Dorling Kendershey Pvt Ltd, New Delhi.
7. <http://organicblanket.info/2013/02/22/bamboo-bed-sheets/>
8. <http://www.kew.org/plants/bamboos/index.html>
9. <http://www.fashionandearth.com/index.php/faq.html>
10. [http://wwf.panda.org/about\\_our\\_earth/about\\_freshwater/freshwater\\_problems/thirsty\\_crops/cotton/](http://wwf.panda.org/about_our_earth/about_freshwater/freshwater_problems/thirsty_crops/cotton/)
11. <http://www.fibre2fashion.com/industry-article/11/1095/different-types-of-weaves1.asp>
12. <http://www.fibergypsy.com/common/children.shtml>
13. <http://onlinelibrary.wiley.com/doi/10.1002/app.29826/abstract;jsessionid=72EEAF081C7FFA9CFE45B3897994EA92.d01t01?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
14. <http://www.cotton.org/pubs/cottoncounts/story/>
15. [http://plainweave.net/Plain\\_Weave/Welcome.html](http://plainweave.net/Plain_Weave/Welcome.html)